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NAVAL WARS OF THE FUTURE.

NAVAL tactics, the science which relates to the management of fleets and single vessels of war, embraces strategy and evolutions under all circumstances. Many forms, or orders, are necessary for conducting the evolutions of a fleet, and, unless a Commander-in-Chief is thoroughly versed in tactics, has a quick eye to see the defects in his enemy's line, and a ready mind to execute, he will fall short of what is required, and will probably gain few laurels, if indeed he is not brought to grief for want of that knowledge which every sea officer should possess.

Two opposing fleets may be compared with the figures on a chessboard, which are moved as circumstances may seem to require, to give each opponent the chance for victory. The problem of manœuvring a fleet is, however, much more difficult, as we see the game of chess well played by very ordinary persons, while the men who have proved themselves great naval tacticians can be counted on one's fingers. Many battles have been won at sea by men who could not be considered tacticians, but their victories have been gained by courage, which is just as necessary in naval tactics as in any other case courage to decide quickly in emergencies, without which no man can have the nerve to take advantage of the opportunities offered by his foe. Courage, combined with the science of which we are treating, will, other things being equal, insure victory.

Naval tactics is the most difficult branch of the art of war, and, notwithstanding the many centuries in which great fleets have contended on the ocean, it has not yet reached its acme. At the present time there is a diversity of opinion as regards the proper manner of manœuvring and fighting, and no one would like to commit himself by proposing a system for future wars, for fear of proving a false prophet, since so many new elements are constantly entering into the science of war that only a master mind can grasp the whole subject and form some idea of future naval operations. Even in the management of a large fleet in time of peace, there is enough to occupy the mind of a Commander-in-Chief.

Many things are to be learned in the organization of a fleet before going into battle, and he who neglects to drill his ship's crews in the manœuvres necessary to enable its atoms to preserve a compact form, or to change rapidly from one form to another, would prove himself a tyro indeed, quite incapable of conducting great operations.

Naval tactics present intricate formations which are Greek to a landsman and not much more intelligible to those officers who put off learning the science of their profession until they arrive at command. Yet all the formations can be stored in the memory, ready to be put in practice when opportunity occurs.

I here give an outline of these fleet formations which will show the uninitiated what difficulties are encountered in manœuvring a fleet even in peaceful times, and it may induce them to further study the subject.

An assemblage of vessels, either by simultaneous, successive or direct movements, or by a conversion, or by a wheel in concentric circles, or by a combination of movements, can attain any formation necessary to a fleet or squadron. That is an axiom. Success depends on the Commander-in-Chief, who may be readily able to form line ahead, or line abreast, or in echelon, which are called "simple formations." But, if it happens to be desirable for any combination of vessels to divide and form on more than one line of bearing, the formation becomes a complex one, and is said to be, "in line ahead in two columns," or "in double line ahead," "alternate line abreast," or "in groups in line abreast," "in naval square," "in double echelon," or "in groups in double echelon," or "in chase formation," or "in retreat formation."

These are the general formations which would probably be

practiced when two fleets met upon the ocean manœuvring for position previous to attack, and it is not difficult to see that such manœuvres involve intricate changes, the success of which depends not only on the Commander-in-Chief, but on the ability of commanding officers of single ships.

Naval tactics, outlined as above, constitute the system of attack and defense in the formation of fleets which we have adopted without ever having had an opportunity of putting it in practice in default of a squadron of evolution, or of the opportunity to witness the manœuvres of foreign fleets, which latter seem to depend more on the benefits to be derived from the simplest formations than the case will warrant. So many new factors are constantly coming into the field of naval warfare that it seems to me when a sea fight occurs, with all the latest implements, we will discover that the whole world has been committing great mistakes, and that there will be more science practiced than has heretofore been thought necessary, and, therefore, it will be better for us to pay more attention to science than to lay so much stress on simple fleet manœuvres.

The treatise on naval tactics, which may be called the foundation for all subsequent books on the subject, was written in the reign of Louis XIV., by a French Jesuit, Paul l'Hoste, who was a thorough seaman and had seen much service in the naval wars with England. His work was written after consultation with the Marshal Count de Tourville and other famous admirals of France.

In their early career the French were not distinguished as seamen, and in contests with the English in particular, generally came off second best. Even in the time of Elizabeth, the English navy gave proof of prowess possessed by no other nation, owing to the attention paid to her maritime forces by that queen of famous memory. History abounds with the record of English victories at sea, and those gained over the French impressed Paul l'Hoste with the idea of preparing his treatise, which assisted greatly in enabling French fleets to hold their own against their rivals, but could not compensate for the bold, dashing manner in which the British made their attacks, and frequently set the French tactics at naught.

This trait in the English character of defying all obstacles to come in close contact with an enemy, seemed to render the use of an intricate system of naval tactics unnecessary for them. They conquered by the exercise of that stubborn will which is an attri-

bute of the Anglo-Saxon race, together with their expertness in seamanship which has rendered their navy renowned.

In future wars, where new elements are brought into play and the fleets are propelled by steam instead of sails, Great Britain may find herself at fault for want of that precise knowledge in tactics, which gives an army such a decided advantage over a less skilled opponent; yet, with their stubborn way of fighting, their facilities for naval construction and armament, and their nautical ability, Englishmen may prove victorious in the coming time as in years gone by.

We can hardly predict the result of future naval wars. France, the most scientific of nations, has made great improvements in ships and all warlike appliances, and, as the manœuvres of future fleets may correspond more nearly to those of an army than in the days of sailing ships, and as the French may exhibit more skill than they did in former times, perhaps the English are destined one day to encounter a foe that may snatch from them the laurels won since 1588, the year of the "Invincible Armada." Some future French admiral may avenge the humiliation inflicted on his country by Howe, Hyde Parker, Hood, Rodney, Collingwood and Nelson, not to mention others whose names illuminate the naval history of Great Britain.

Who can tell what may happen when science usurps the place of seamanship pure and simple? The day may come when some other naval power than Great Britain may show a record of brighter and more important deeds than have ever yet been chronicled. I cannot help thinking, however, that the same impulses which inspired the Britons of the past century still lie *perdu*, and only want to be awakened by the cry, "*To Arms!*" and, all things being equal, we shall see the Britons gathering on that element of which they seem a part a harvest equal to what they have reaped in the past.

I believe that the nations of Europe look upon the naval power of Great Britain as the one thing that cannot be broken, and, while that power endures, Great Britain will hold her own against any three continental nations combined. The same reasons that, a century ago, made the British navy superior to all others may exist in the future; for, during the French Revolution, after a long series of hostilities between Great Britain and France, the conviction was forced upon the latter that the only way to compete with her rival was to build a navy of equal force. When

this scheme was proposed in the French Assembly, Mirabeau remarked, "The English war marine has grown to what it is, like the English oaks of which the ships are built, through the slow progress of a thousand years. You cannot have a navy without sailors, and sailors are made through the dangers of the deep, from father to son, until their home is on the wave. You cannot build up a navy at once by a simple act of legislation."

Since the time of Mirabeau the science of naval war has been changed, and other nations of Europe, besides Great Britain, may, in the future, attain reputation as naval powers which hitherto they have failed to acquire. Mirabeau spoke truly when he described the British navy, but the changes that have taken place in recent times are such as Mother Shipton in her wildest predictions never hinted at. Steam rules everything, and the gallant hearts who once bade defiance to the tempest, and, like the stormy petrel, loved to disport on waves running mountain high, have given place to a class of men who, although they wear the emblems of the old sea-dogs, are of quite a different character, and the motive power of war ships is in the hands of mechanics who have never been subjected to that ordeal through which British sailors had to pass for many generations.

The advent of steam has changed the whole character of war, not only in the rapidity with which the different movements can be carried on, but also in the character of the men who perform the manual labor, and this has a tendency to place the sailors of different nations on a more equal footing. The wars of the future, then, may turn out to be as different as possible from those of the past, and although we may educate officers in the higher mathematics to enable them to rise to the occasion, when the time arrives, the results may be exactly opposite to what we anticipated.

There have been no conflicts by which to test thoroughly the new system of naval warfare, or the implements by which war is henceforth to be carried on. In days of yore squadrons would sometimes fight for hours with smooth-bore guns, and do little damage to each other. The guns were comparatively small, the ship's sides very thick and solid, so that only the heaviest shot would pass through. The masts and rigging might be badly cut up, but the ships would haul off to repair damages, and the crippled spars and sails would soon be replaced. In the course of an hour,

perhaps, a ship that had been badly cut up was ready to go into action again, while carpenters were slung over the side to plug up shot holes. Had any of the ships of Nelson's day been struck between wind and water by a twelve-inch rifled shell; exploding on impact, as is generally the case, the ship would have had a hole torn in her side through which a good-sized whale might enter, and would have gone to the bottom in five minutes. Such is the disparity between the guns of the present and those of the past, and the disparity between the old-fashioned line-of-battle ships and the monster armor-clads of to-day is equally great.

What made England mistress of the seas were her wooden walls, and the gallant tars that manned the guns. The sea-girt isle produced a far greater number of thorough seamen than any nation of the European Continent, for the latter placed their chief reliance in huge armies, and it is only within a comparatively recent period that some of the most powerful countries have had any navy at all. In the seventeenth century England, Spain, Holland, and France were the naval powers par excellence, and with the prestige gained by the English against superior forces, it seems to have been thought useless for the smaller powers to waste much money upon naval armaments, which would simply fall a prey to the enterprising islanders.

It is only since the introduction of steam that the nations of the world, great and small, have concluded to incur the expense of a navy, some of those who had previously no navy at all becoming suddenly powerful in their ships, and even the Chinese and Japanese have armor-clads that will compare favorably with those of Europe. As matters now stand, it is difficult to foresee the result of future conflicts. Had the battle of Trafalgar been fought under steam, who can say what might have been the result?

After the French adopted the tactics of L'Hoste the English plan of steering boldly down upon an enemy and closing with him as soon as possible did not prove as effective as before, for the French received the advancing enemy with their entire broadsides, raking the English ships fore and aft, so that by the time the latter got alongside a French ship their sails and rigging would be dreadfully cut up. Every other French ship would then run off hidden by the smoke and form to leeward. As soon as the English formed in line and opened their batteries, the remainder of the French fleet would run off before the wind and

unite with the first division, while the crippled English could but slowly follow. This system of the Frenchmen running off and receiving the English with their entire broadside, while the latter, exposed to a raking fire, could only use their bow guns, changed the whole character of naval warfare. The French were the better tacticians, the English the better seamen. The boldest and most dashing English commanders frequently had the mortification of seeing a French fleet escape them through the tactics of the Jesuit.

These tactical successes were considered by the French as victories, and in many cases their importance justified the claim. The French will probably retain their superiority as tacticians from their peculiarly systematic character, and this may have a very great effect in future wars between them and the English in deciding to whom victory shall belong.

The French have been in the past more a nation of soldiers, while the English owe not only their success in war but their very existence to the fact that they are *par excellence* a maritime people. If the English ever permit any decadence in their navy, either in material or personnel, it will be a step toward the downfall of British greatness. England should not, in the future, omit any of those precautions in perfecting her naval power which have made her so successful in the past. In the famous naval battles of the last three centuries we can trace the progress of scientific warfare and note when the character of naval design has changed so that what may have been considered a perfect organization in the sixteenth century would to-day excite derision.

The engagement of Mathews and La Const (1744), Anson and La Jonquiere (1747), Hawke and L'Etendreau (1747), Knowles and Reggio (1748), Parker's three actions (1758-59), Boscowen and La Clue (1759), Keppel (1778), Lord Howe and D'Estaing (1778), Hyde Parker and De La Motte (1780), Rodney (1780), Cornwallis and La Motte Piquet (1780), Rodney (1782), Howe (1782 and 1794), St. Vincent (1797), The Nile (1798), and Trafalgar, are some of the sea fights that have made England famous and given to France the second place, notwithstanding she often held her own against odds and even gained glory from defeat. The advantages in tactics were on the side of the French, but the indomitable energy and superior seamanship of the British won the day.

There are eras in the history of naval warfare which are

worthy of particular consideration, from the time when ships armed with heavy artillery began to act in concert and formed into divisions under the command of Admirals, sailed on lines of bearing-in forms of pursuit and retreat, and executed such manœuvres as were absolutely necessary to prevent a fleet from falling into confusion.

This era may properly date from the sailing of the "Invincible Armada," in 1588, and I refer to it to show what courage and seamanship will effect against an apparently overwhelming force. What happened three hundred years ago may happen again in the future with similar unfortunate results to the too confident invader. Had Philip of Spain succeeded in his project of conquering the British Islands, the whole future of that country would have been changed, and many events which have illustrated the might and glory of England would never have taken place. As master of England, Philip II. would have commanded the North Sea, forever secured to Spain the possession of the Low Countries, and enabled her to blockade the entrance to the Baltic and coop up the Russian bear in his own waters.

The Armada was the most powerful and perfectly fitted fleet that had ever been sent to sea. It was conceived by the most powerful monarch of Europe, who was animated by the most intense hatred of England, her Queen, and her religion. The fleet consisted of one hundred and thirty-two ships, armed with three thousand one hundred and fifty-five of the heaviest cannon known at the time, a large number of smaller vessels, and a vast assemblage of transports. From all parts of Spain young men of the best families volunteered their services until the ships could hold no more. Many friars accompanied the expedition under the direction of a vicar of the Holy Inquisition, to aid in extirpating heresy after the conquest of England should have been effected. The ships of the Armada were of enormous size and strength, and cased with heavy planks to prevent their being pierced by cannon balls, a year's provisions were provided, and nothing left undone to make the expedition a success. In addition to the maritime forces, the Duke of Parma had collected a choice army of forty thousand infantry and eighteen hundred horse ready in transports, at a moment's notice, to land in England.

Such were the enormous preparations made by the Spaniards that all Europe was in alarm, not knowing, for some time, where

the blow would fall. The situation of England, during the preparation of the Armada, was a very unhappy one, particularly when Elizabeth was informed by the King of France of the probable intentions of Philip. With her accustomed energy the Queen took all necessary steps to repel the invasion and the people of England rushed to arms. A fleet of war ships was prepared, and, although the preparations were begun only on November 1, 1587, four years after Philip had commenced to fit out the Armada, yet the English fleet was ready for sea by December 20th of the same year, a celerity that could not be exceeded at the present day.

In this fleet were the most renowned seamen of the age. Lord Howard, of Effingham, was appointed Admiral; Sir Francis Drake, Vice-Admiral, and Hawkins and Frobisher, Rear Admirals. Lord Henry Seymour, with forty English and Dutch ships, was sent to prevent the army of the Duke of Parma from getting to sea. This piece of English history has a pointed bearing on the subject which we are treating. England was never before, and never will again, if she is true to herself, be in such a perilous condition as she was in 1588, when the chances seemed ten to one that she could not escape destruction—a calamity which would have retarded civilization for centuries.

I wish to emphasize the fact that it was through the navy that the English and their sovereign escaped destruction, for so incensed were the Spaniards against Elizabeth for putting to death the Catholic Queen of Scots, that they would have visited her with condign vengeance, and they had already parceled out the real and personal property of her subjects.

The largest of the Spanish ships were of one thousand five hundred tons, while none of those in the English fleet exceeded eight hundred, and their seventy-five ships averaged only three hundred tons, while the disparity of guns was great enough to have appalled any but the stoutest hearts. In the contemporary accounts of the Armada, we read that eighteen of the largest Spanish ships, carrying eight thousand men, were destroyed in battle, seventeen ships were lost on the Irish coast, forty on the English coast—in short, disaster overtook the whole expedition, and only a fragment returned to Spain. Of the English fleet, but one ship was lost in battle and not more than one hundred men.

This great victory, over the most extensive naval expedition ever fitted out, was gained by a few ships, but they were manned by skillful seamen, full of courage and energy and governed by strict discipline. No such conditions prevailed on board the Spanish ships. The leaders were not skillful Admirals, the seamen were not well drilled at the guns, and most of the time on shipboard was given up to masses and religious ceremonies by the numerous priests, in order to insure victory over the heretics.

When General Anthony Wayne was about to storm the intrenchments at Stony Point, he had to pass a stream to reach the enemy's works. "Soldiers," he said, "put your trust in Providence, but keep your powder dry," an exhortation very suitable for the emergency. It would have been well for the Spaniards if they had devoted more time to drill and preparations for the stern realities of battle.

I have given this brief sketch of the Armada because that celebrated expedition has an important bearing on the naval wars of the future. The particular qualities which marked the English seaman of three centuries ago are still paramount. They are as much in advance now, in all that tends to make a navy efficient, as they were in the days of the Armada. The progress of such a nation should have a great deal to do in shaping the conduct of future naval wars.

The danger is that the British navy may fall into the error of supposing that it can dispense with minute excellence in naval tactics, for, where only a few forms of evolutions are brought into play, they must be executed with precision to avoid the possibility of confusion.

The nations of Europe seem alike indifferent at present to naval tactics, which is doubtless owing to the introduction of steam propulsion. They have consequently given to the world no system of naval tactics thoroughly suited to present requirements, such as would assure the thoughtful officer that a meeting of two hostile fleets will not mean the dashing together of the combatants in such a manner as to cripple both parties without giving the victory to either. It would be like the attack of two undisciplined armies, who, after being mixed up in confusion, pair off into groups and end by clubbing each other with the butts of their muskets.

Everything connected with naval warfare is the result of sci-

entific study, from the construction of hull and engine and heavy guns to the little *mitrailleuse*, which deals such destruction when an opportunity offers for its use, and it cannot be supposed, in this progressive age, that these magnificent engines of war that have cost so much time and money are to be placed in the hands of those who are indifferent to the manner of using them and who trust to brute force for success. You might as well put a man on the coach box who did not know how to handle the reins and expect him to drive a four-in-hand successfully.

We have been accustomed to consider the British "Channel Squadron" as a technical school, but an English writer remarks of this fine array of vessels in 1872: "The great tactical revolution caused by the introduction of steam has been either quietly ignored or its extreme significance has been left to be pointed out by a small company of prophets who have not as yet succeeded in gaining more than a partial hearing for the statement of their views. . . . It is somewhat humiliating to reflect that as yet, in spite of the immense progress made in every other branch of the naval art, the very stones wherewith to raise our tactical structure are, as has been well said, still unhewn. Some malignant fairy appears to have been slighted at the birthtime of that mighty fleet which has won the admiration and become the model of all the navies of the world. It possesses all the elements of perfection, but lacks one gift, the power to use them with effect. We have as yet found out no proper system of tactics, not because the invention of one is impossible, but because we have neglected to follow the road which leads to it."

This was written some years ago, but applies substantially to the present state of affairs, the slow progress in naval tactics being anything but creditable. Hence, while great fleets of armor-clads are found throughout Europe, and many of the ships are wonders in naval science, it would seem difficult, if not impossible, to predict what would be their effect in future wars, unless these mighty structures are taken into battle under such tactical arrangements as will prevent confusion and make each fleet a unit, so far as possible.

Not to possess a good system of naval tactics would put the modern nations behind those of antiquity. The Greeks in particular, taught in public schools the science of naval warfare, and the victories they gained at sea were owing to the fact that their

fleets were directed by men of great ability, according to a system that enabled the vessels to act in concert. The fleets of antiquity were propelled by oars, those of the future will be driven by steam or other power that will insure certainty of movement. It would, therefore, seem that the system of the future would be not unlike that of the Greeks.

The first period of naval warfare extends from the time of the Phœnicians, Greeks, Carthaginians and Romans to the time of Henry VIII. of England ; the second to the year 1697, when the French, after many defeats, adopted the tactics of l'Hoste ; the third to the time when screw propulsion was generally adopted for naval purposes, and the fourth since the armor-clad and its immense guns came into existence.

In all the changes of modern times the English have been generally prompt to adopt what promised to be improvements, and it seems strange that, though so near perfection in everything else connected with her fleets, she has never yet had a proper system of tactics such as would enable her to move her forces into action with that celerity which is demanded by the change in the system of naval warfare, and some of us may live to see the French, Russians or Germans manœuvring their ships with a precision superior to the nation which has most at stake on the ocean and to whom the absence of this perfection in tactics may mean future defeat.

It is this supineness on the part of Great Britain in regard to the art of naval war which makes us doubtful as to the results of future naval wars in which she may have a part ; the conditions will be so different from what they have been hitherto.

Since Trafalgar, there have been no great battles between fleets and few engagements of consequence between single vessels. The battle of Lissa, between the Italians and Austrians, where Admiral Tegetoff gained a decisive victory, was destitute of everything tactical, and the day was won by a spasmodic dash, in which the Austrian flagship sunk the best vessel in the Italian fleet and was herself almost disabled.

The battle of Navarino, in which the combined fleets of Great Britain and France destroyed the Turkish fleet, offers no information in regard to naval tactics. The war between Chili and Peru tells us nothing that would determine the value of armor-clads over wooden vessels, and in the only case where an iron-clad

squadron was used against stone forts and earthworks the British fleet did not show itself impregnable to the Egyptian guns while reducing the fortifications of Alexandria to ruins. It yet remains to be seen what will be the result of an encounter between two fleets of armor-clads of equal size at sea, where ships-of-the-line, rams, and torpedo vessels are brought together. Without doubt there will be a different state of affairs to what has generally been expected.

When the battle between the "Monitor" and the "Merrimac" occurred the powers of Europe were struck with amazement, for it was plain that this action had given the deathblow to all those magnificent ships which had hitherto been the pride of their respective nations, since they would be helpless to contend against vessels of the new American type. Here were two vessels thickly armored with iron, with guns of the heaviest type, joined in battle at close quarters for three hours and a half, without either receiving serious damage. It seemed probable that the action might have continued until both vessels had exhausted their ammunition, while it was plainly evident that the heaviest three-decker could not lie half an hour alongside the improved iron-clads the United States Government was constructing. With the energy which characterizes Great Britain, where her navy is concerned, she lost no time in making preparations to meet the emergency, replacing her ships-of-the-line and three-deckers by a type of armored vessels that could enable her to defy the world.

In 1862, Great Britain constructed the grandest fleet of steam war vessels that had ever been put afloat. It had always been her policy to build her line-of-battle ships as nearly alike as possible, so that when drawn up in line they would present a uniform weight of metal throughout its whole extent, and no one part be weaker than the other. No two powers in Europe combined, could have presented such a line of battle at sea as Great Britain, and it is safe to say she was a match for France, Russia and Spain. Well do I remember those grand old ships of the "Trafalgar" and the "Wellington" class, the latter built to carry one hundred and thirty-one and the former one hundred and twenty guns. The very sight of these ships gave an exalted ideal of naval power. The French and Russians had equally fine ships, but the guns at Hampton Roads sounded the death knell of these grand vessels,

and in a few years they were all laid up in ordinary as mementoes of the past.

It was melancholy to see the mighty structures which had upheld the glory and power of the nations consigned to the scrap heap, but there was no alternative when their services were no longer valuable. But, right here, European powers lost sight of one most important consideration. Up to the time of the American Revolution it had been the aim of all naval powers to maintain fleets composed of ships-of-the-line, which should be their main power of attack and defense, while frigates were not admitted to the line of battle but served as outposts or to take a crippled vessel out of action, or act as dispatch vessels, in fact, be "the eyes of the fleet," for in the opinion of the best authorities the power of a navy lay in its ability to unite in a compact line as many of the largest class of ships as possible. In computing the power of a navy, the number of line-of-battle ships it could send to sea was the test of its strength; for, no matter how many frigates and sloops-of-war a nation might possess, they could not contend against the ships-of-the-line.

In building a new navy Great Britain, and those who followed her, committed grave mistakes. They did not apparently consider that there would be still the same necessity for heavy ships to form in line of battle, while frigates and sloops, or commerce destroyers, should be constructed in accordance with the new order of things for use in time of war. There was a wide difference of opinion in Europe as to the merits of the two types of vessels that had battled in Hampton Roads. Secretary Welles, in his pride at the success of the monitors at the conclusion of our civil war, sent the "*Miantonomoh*" to Europe. She was a slow vessel, but of formidable dimensions and strength, with heavy guns that would have destroyed any ship in the British navy. Combined in line with others of like destructive power, she might have been called invincible, but her merits were generally ignored, and her defects sharply commented upon.

The great subject of discussion in England at that time was, "What should constitute a modern war-ship?" Many proposals were made by different naval architects and ship builders, and much discussion ensued in the Board of Admiralty. The point was settled by building the "*Warrior*" and "*Black Prince*," though both of these vessels together could have been beaten by one of

the "Miantonomoh" class, supplied with proper engines, heavy ordnance and armor, and such other appliances as English mechanical skill could devise.

An English writer observes : " It is a fortunate circumstance for this country that throughout all the excitement and contention of the last fifteen years, those who guide our naval policy have preserved, on the whole, a wise course, and have added to the navy year by year a succession of the most powerful ships that the resources at their command enabled them to produce. They have not waited till it could be proved beyond dispute by *a priori* reasoning what the characteristics of a modern war-ship should be ; but have gone on building ships of increased and varied power, so that should an emergency arise, we shall be prepared, if not with a *fleet* of perfect ships, at least with a more formidable fleet than can be possibly brought against us. This is most unmistakably our present position : After a short period of reconstruction, we are in possession of the most magnificent fleet that has ever been seen, and are able to send to any part of the world an amount of fighting power that appears positively overwhelming."

This is substantially true, for the English have kept ahead of all other nations in the number of their armor-clad ships ; but whether she has developed the best line-of-battle ship, one that can maintain position, and not be driven from the line owing to some inherent weakness, remains to be seen.

The "Warrior" and "Black Prince" were certainly not good types of line-of-battle ships, and in no way equaled some foreign vessels built shortly after them. They were good frigates, but not ships-of-the-line. The "Hercules," "Monarch," "Minotaur," "Northumberland," "Inconstant," "Bellerophon," "Defense," "Narcissus," "Agincourt," "Volage," "Iron Duke," "Hotspur," "Glatton" and "Devastation" were excellent designs for their time, but they are not all alike or exactly calculated to take their place in line of battle against the guns of today, which shows a want of forethought such as we should hardly have expected in the Board of Admiralty. Steady improvement has marked the course of events in the British Navy, and at the present time they have a force which will probably prevent any maritime nation from courting their hostility.

DAVID D. PORTER.

[*To be Continued.*]